Wyckoff Eagle Harbor Site

EPA United States Environmental Protection Agency

DEPARTMENT OF ECOLOGY State of Washington

Community Interest Group Meeting

February 4, 2014

Meeting Agenda

Performance Objectives and Remedial Action Objectives
- Discussion and informal input from CIG members

Remedial Technologies Being Considered
- EPA presentation
- Discussion and informal input from CIG members

Questions and informal input from audience members

Next Steps, Upcoming Meetings
- Community Interest Group Meeting #3 (May 6, 2014)
- Briefing and input on alternatives evaluation
- EPA informal public meeting #2 (anticipated late July 2014)
- Community Interest Group Meeting #4 (anticipated Sept 9)

Performance Objectives
to be taken into consideration by
Cleanup Alternative Analysis

1. Remove or treat mobile creosote in the upper aquifer to the maximum extent practicable such that migration and leaching of contaminants is significantly reduced.
2. Carry out a cleanup action that does not require long-term active hydraulic control as a part of O&M following implementation of source removal.

How Much and Where is the Creosote?

- Creosote thickest in the center of the site.
- Beyond the center of the site, no obvious patterns with distribution with depth – likely associated with preferential pathways.
- Aquitard effective in stopping creosote going deeper.
- Contaminated soil volume – 68,000 yd^3 MVS, 109,000 yd^3 Theissen Polygon.
- Over 50% of contamination in the upper 25'.
- 80% of contamination found in gravel/sand.

Remedial Action Objectives

1. Ensure that surface soils meet cleanup levels protective of direct contact with humans and animals having unrestricted public access to the site as a public park.

2. If intertidal areas are present following implementation of the remedial action for OUs 2 and 4, ensure that surface soils within intertidal areas meet sediment standards protective of aquatic life and human health.

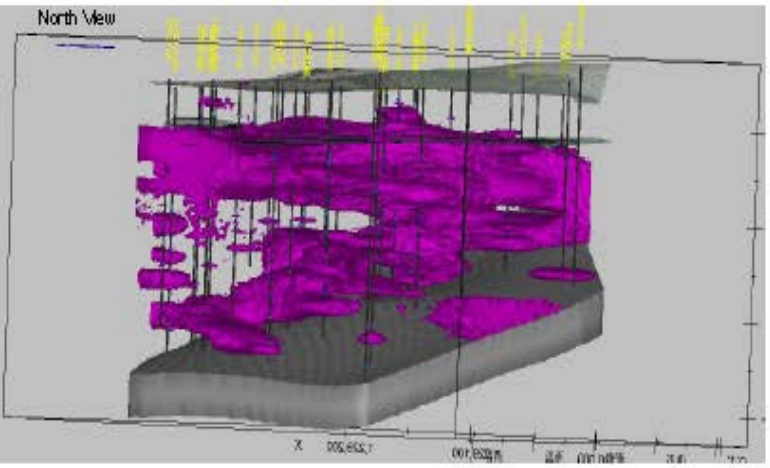
3. Prevent discharge of upper aquifer groundwater to surface water at concentrations that would result in exceedences of: a) surface water criteria applicable to Eagle Harbor and Puget Sound); and b) sediment standards protective of aquatic life and human health (see Notes 1 and 2).

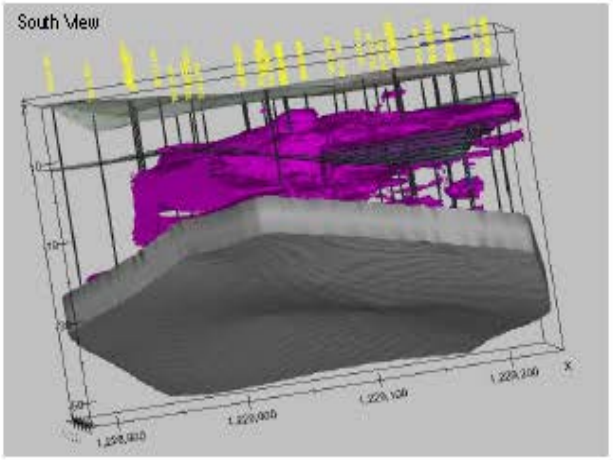
4. Prevent further degradation in lower aquifer groundwater and restore that portion of the aquifer beyond the influence of saltwater intrusion to MCLs within a reasonable timeframe.

5. That portion of the lower aquifer that is influenced by saltwater intrusion shall be protective of discharge to surface waters in Eagle Harbor and Puget Sound.

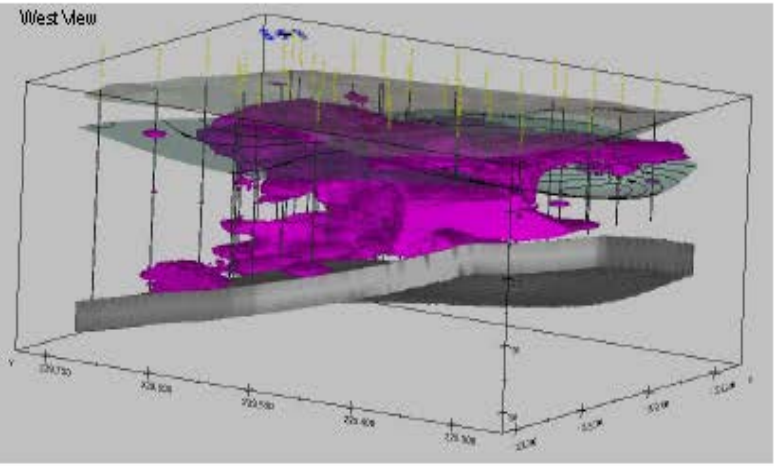
Focused Feasibility Study

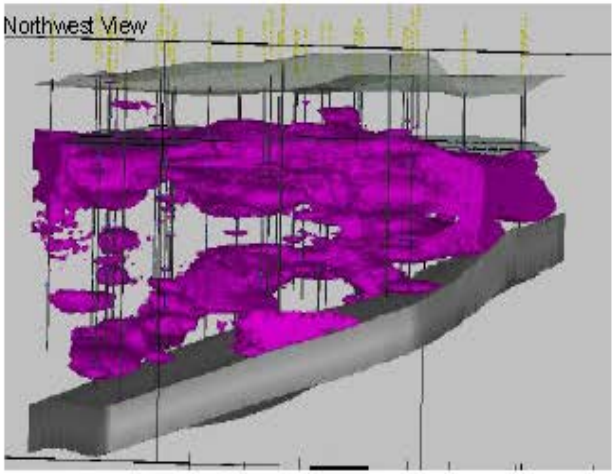
- Identify types of technologies that are appropriate to clean up pools of creosote: “Center of the site – Core Areas”
- Identify types of technologies that are appropriate to clean up areas away from the center of the site with lower levels of contamination: “Periphery Areas”
- Identify types of technologies that are appropriate for varying depths of contamination: “Compartments”

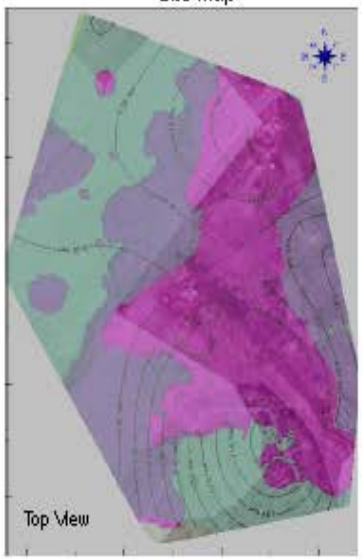


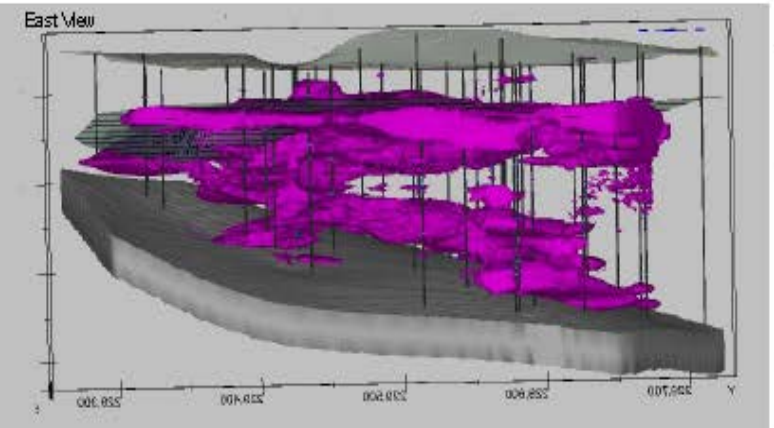


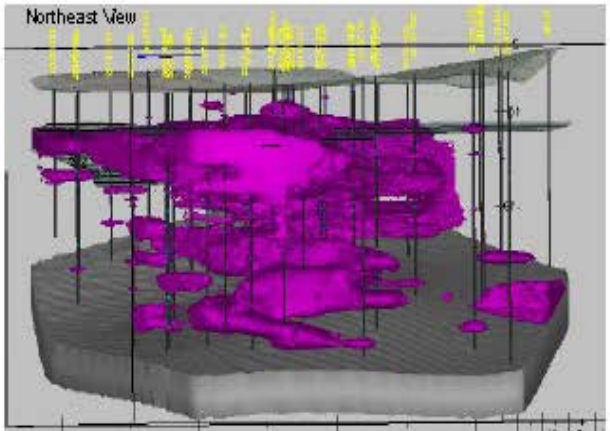
Site Map

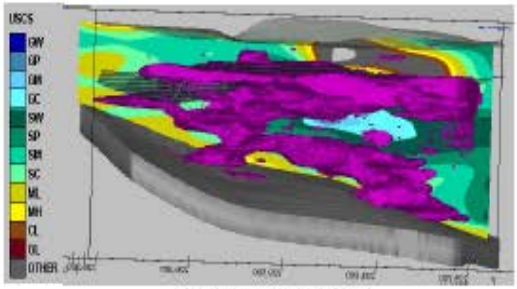












East View with Lithology

Plate 5
Visualization of Subarea 3

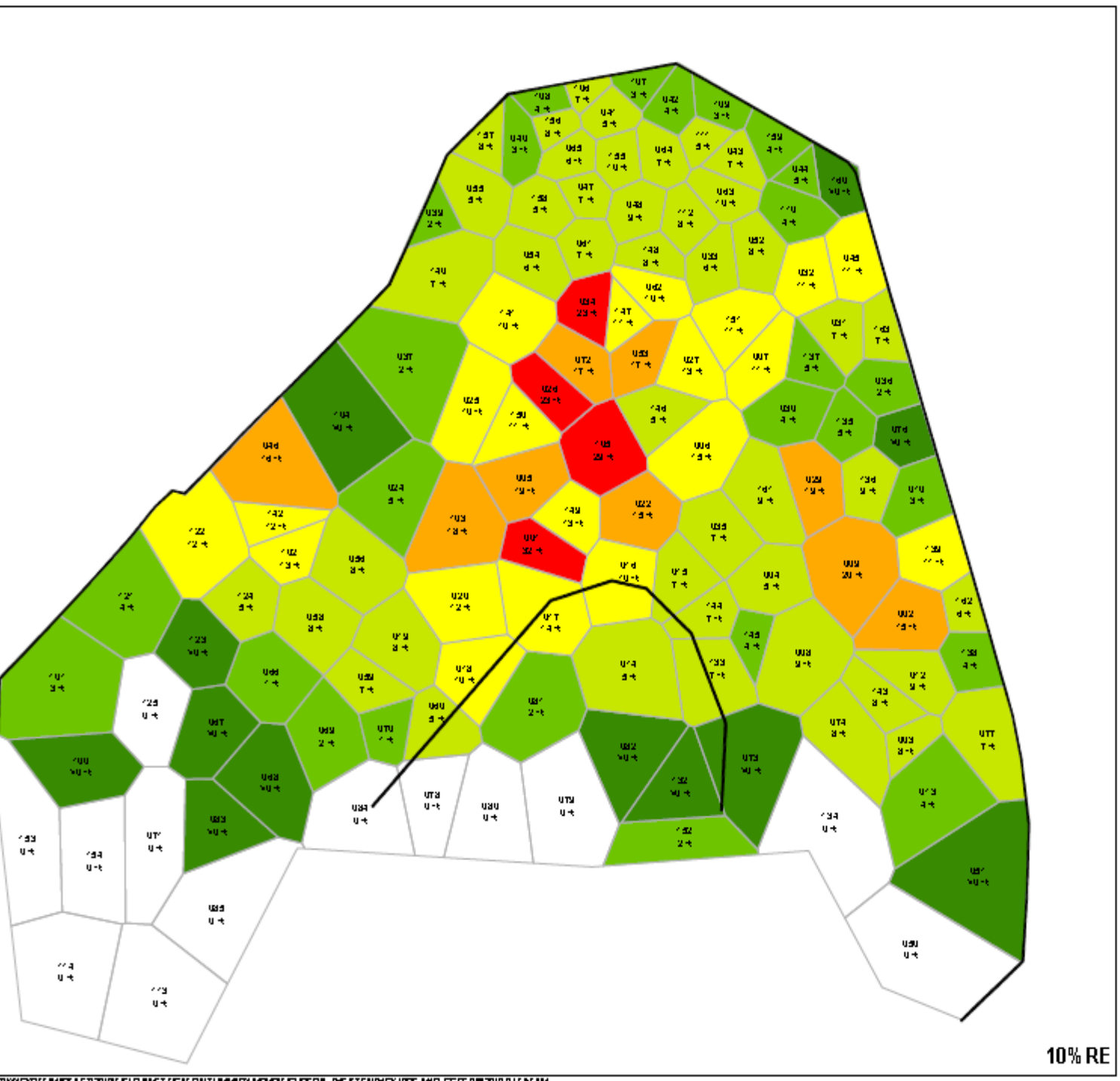
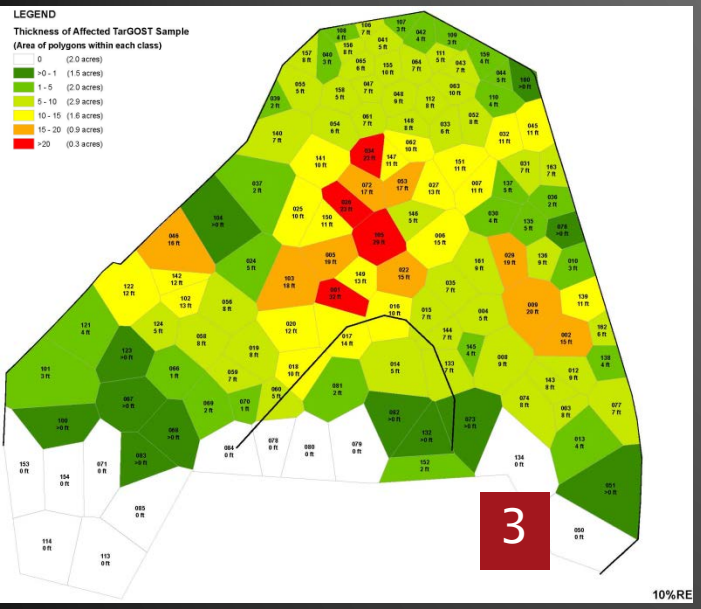
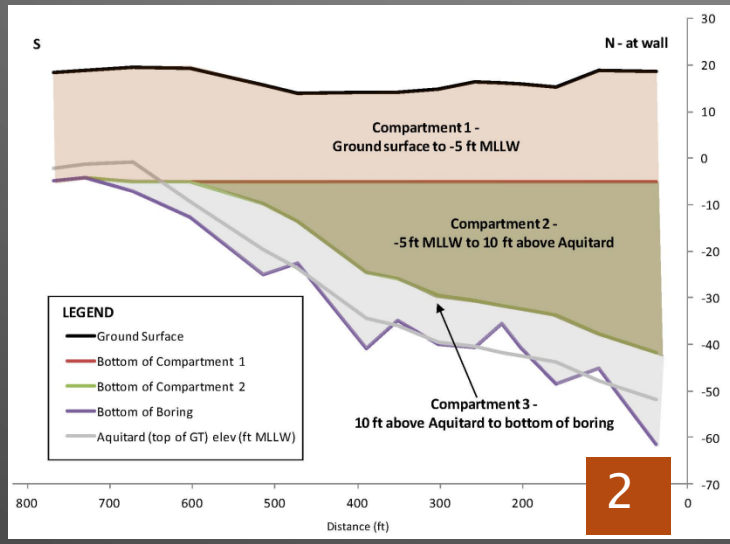
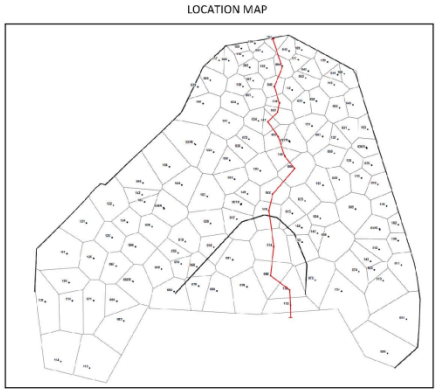


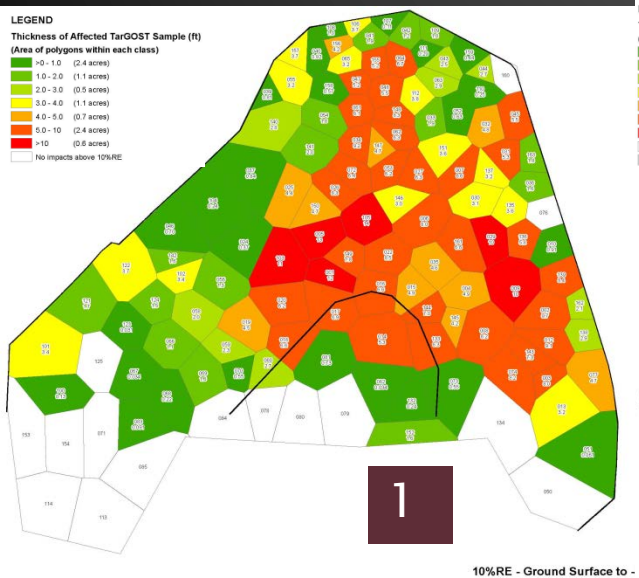
Figure D-6
Thickness of Affected TarGOST Samples
10%RE
Upland Dataset
Wyckoff Upland Field Investigation
Wyckoff/Eagle Harbor Superfund Site

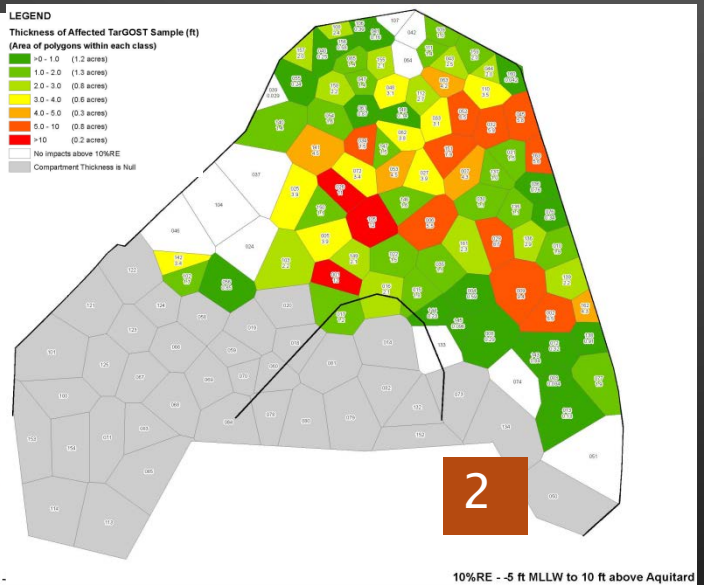
TarGOST Distribution by Thiessen Polygon and Compartment











Compartments 1 - 3

Common Elements for Most Cleanup Alternatives

- Access Improvements
- Demolition/Decontamination/Disposal/Reuse of existing structures (footings/foundations)
- Propane system/energy evaluation
- Surface cap
- Monitored Natural Attenuation (after active treatment/removal)
- Passive groundwater treatment
- Shoreline enhancements (sheet pile wall)

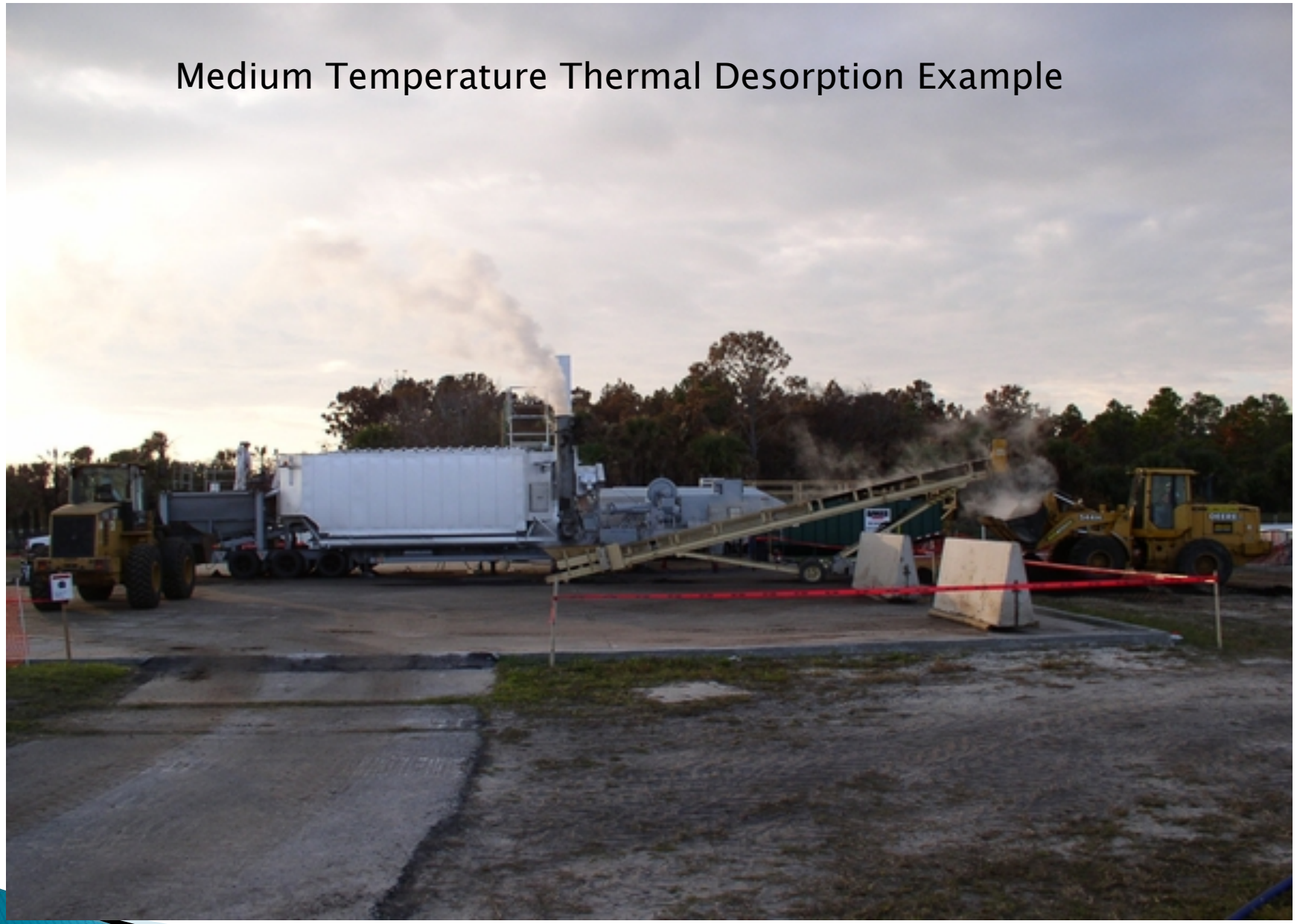
Technologies being Evaluated

- Thermal Enhanced Extraction
  - Below ground Steam Injection
- Medium Temperature Thermal Desorption (MTTD)
  - Above ground heating ~ 1000°F
- *In Situ* Soil Stabilization (ISS)
  - Below ground mixing with Portland cement mixture
- *In Situ* Chemical Oxidation (ISCO)
  - Below ground mixing with H_2O_2 or permanganate
- Enhanced Aerobic Degradation
  - Below ground injection of air

Draft Alternative X
Thermal Based Remedy Equipment

Enhance Extraction System

Medium Temperature Thermal Desorption Example



In Situ Stabilization (ISS)

- Inject Portland Cement mixture below ground to form a low-strength concrete column to immobilize the creosote product.
- Use Jet Grouting for deeper contaminated areas.
- Post-Initial Source Reduction (if needed) – The site will be treated by air injection, O_2 injection, or *In Situ* Chemical Oxidation.

ISS Equipment

8' Auger

Mixi
IS
Colu

Layout for
5' ISS
Columns

“Follow On” Technologies to Aid in Clean Up of Groundwater

- In situ chemical oxidation
- Enhanced aerobic biodegradation

Development of Cleanup Alternatives

- Technologies will be combined into sets of cleanup alternatives. Containment alternative will also be considered.
- Alternatives to be considered will be protective of human health and the environment and will meet regulatory standards.
- Alternatives will be evaluated for effectiveness, implementability and cost.
- Implementability includes evaluation of duration, noise, odor, traffic, etc.